

- If cleaning of the power cord is necessary, wipe the exterior surfaces of the wall plug and A.C. receptacle plug section of the power cord with a cloth dampened with isopropyl alcohol. If the pump has a detachable power cord, disconnect the cord from the pump prior to cleaning. Do not reconnect power cord to pump until completely dry.
- If cleaning of the A.C. receptacle is necessary, use a cotton swab dampened with isopropyl alcohol; upon completion ensure that all residue and liquid is removed.

CAUTION: Avoid exposing A.C. receptacle and power cord to excess moisture, as this can lead to an electrical shock or fire hazard.

DIRECTIONS FOR CLEANING DROP DETECTOR

- Refer to General Cleaning Directions before starting.
- Clean the drop sensors in the upper drip chamber guide with a cotton swab dampened with isopropyl alcohol.
- Be sure sensor areas are clear.

DIRECTIONS FOR CLEANING ROTOR ASSEMBLY

- Refer to General Cleaning Directions before starting.
- Loosen rotor set screw with a 5/64" allen wrench and gently pull rotor forward off shaft. After removing rotor, avoid getting any moisture in the rotor shaft opening.
- Clean rollers thoroughly with warm soapy water, or isopropyl alcohol if necessary.
- Be sure all parts of rotor are completely dry before putting it back onto shaft.
- To replace rotor, align set screw on hub of rotor with the flattened section of the output shaft.
- Push rotor into place and tighten set screw (Do not over tighten).

3. PREVENTIVE MAINTENANCE INSTRUCTIONS

CAUTION: Disconnect pump from A.C. power source before opening the pump housing.

- Following cleaning of the pump exterior, remove back cover of pump housing and inspect the pump interior for presence of foreign material (e.g., formula).
- If contamination is minor, clean using a cotton swab dampened with isopropyl alcohol. Assure that all residue is removed and dry all cleaned surfaces thoroughly.
- If the interior is extensively contaminated, it is recommended that the pump be returned to Sherwood Factory Service so that any damaged components can be replaced.
- Inspect the power cord, and the A.C. receptacle in the case of detachable cord versions, for excessive wear, damage, or evidence of electrical arcing. Replace the power cord if needed. If repair to the A.C. receptacle is required, return the pump to Sherwood for servicing.

Functional and Safety Testing

Perform the listed tests at each servicing, referring to your "Kangaroo 224/324 Feeding Pump Service Manual" as necessary.

K224 K324

1. Sensor Circuit

This test must be performed with no drip chamber installed and the pump positioned face down away from direct lighting.

- | | | |
|---|---|---|
| a. Phototransistor bias voltage (0.99 to 1.01 VDC) at the collector of the phototransistor [note: adjust R42 as needed] | X | X |
|---|---|---|

2. Low/Dead Battery Detect Circuit

- | | | |
|--|---|---|
| a. Low bat should be displayed when the battery voltage is between 6.8 and 7.2 VDC | X | X |
| b. Audible Alarm | X | X |
| c. Pump should turn off when battery voltage is between 5.3 and 5.6 VDC | X | X |

Reassemble the pump housing prior to performing Steps 3 through 9.

3. Touch Panel and Display

- | | | |
|--------------------------------------|---|---|
| a. "ON" Button | X | X |
| b. "OFF" Button | X | X |
| c. "INCREMENT" Button (1-50, 50-300) | - | X |
| d. "DECREMENT" Button (300-50, 50-1) | - | X |
| e. "START/HOLD" Button | X | X |
| f. "VOLUME" Button | - | X |
| g. "DOSE" Button | - | X |

4. Visual Indicators

- | | | |
|-----------------|---|---|
| a. AC Light | X | X |
| b. No Set Error | X | X |
| c. Flow Error | X | X |

5. Audible Alarm

- | | | |
|------------------|---|---|
| a. Volume Adjust | - | X |
|------------------|---|---|

6. Motor Speed (with feeding set in place)

- | | | |
|------------------------------------|---|---|
| See Motor Speed Verification Test | X | X |
| a. 295 ml/hr. (4.54 to 4.84 sec.) | | |
| b. 35 ml/hr. (12.77 to 13.56 sec.) | | |

7. "Volume Clear" Button

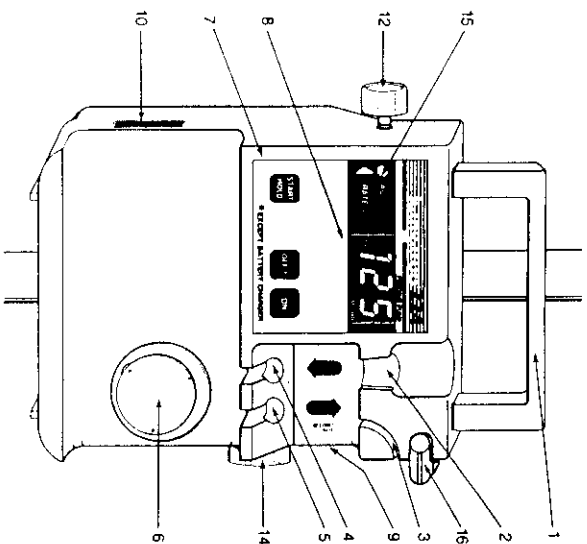
- | | | |
|---------------------------|---|---|
| a. Volume Clear indicator | - | X |
|---------------------------|---|---|

8. Electrical Safety Tests

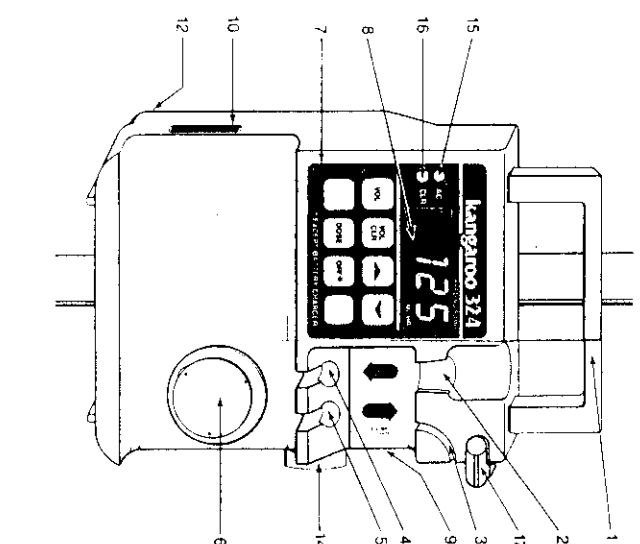
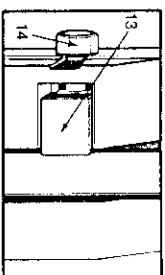
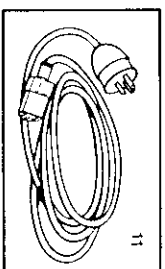
- | | | |
|---|---|---|
| a. Chassis to Ground Resistance (0.15 ohms or less) | X | X |
| b. Leakage Current (less than 100 microamps) | X | X |
| 1. Normal | | |
| 2. Open Ground | | |
| 3. Open Ground Reverse Polarity | | |
| c. Repeat leakage test with pump turned off. | X | X |

9. Operational Tests

- | | | |
|---|---|---|
| a. All units should be operated at 150 ml/hr for a minimum of 5 minutes with a feeding set in place | X | X |
| b. Operate pump for a minimum of 16 min. at 5 ml/hr. | X | X |



- Kangaroo 224**
1. Handle
 2. Upper Drip Chamber Guide
 3. (including drop sensor) Tubing Guide
 4. Lower Drip Chamber Guide
 5. Retainer Lock
 6. Rotor Assembly
 7. Touch Panel
 8. LED Display and Pump Running Indicator Lights
 9. Direction for Use Label
 10. Power Cord Receptacle
 11. Power Cord
 12. Rate Control Knob
 13. Pole Clamp
 14. Pole Clamp Knob
 15. AC Light
 16. Tubing Guide Latch



- Kangaroo 324**
1. Handle
 2. Upper Drip Chamber Guide
 3. (including drop sensor) Tubing Guide
 4. Lower Drip Chamber Guide
 5. Retainer Lock
 6. Rotor Assembly
 7. Touch Panel
 8. LED Display and Pump Running Indicator Lights
 9. Direction for Use Label
 10. Power Cord Receptacle
 11. Power Cord
 12. Alarm Volume Control Knob
 13. Pole Clamp
 14. Pole Clamp Knob
 15. AC Light
 16. VOL CLR Light
 17. Tubing Guide Latch

1. IMPORTANT SERVICING INFORMATION

This pump must be periodically serviced to assure proper functioning and safety. The recommended service interval is 6 months, but in no case less than once each twelve (12) months per JCAHO. Servicing must be performed by personnel trained in servicing Kangaroo pumps and may be done at your biomedical engineering department, by an outside servicing organization, or by Sherwood Factory Service. To arrange for Sherwood Factory Service, call 1-800-448-0190.

Prior to performance of functional and safety inspections described below, clean the pump exterior as described below.

2. GENERAL CLEANING DIRECTIONS

CAUTION: DO NOT IMMERSE PUMP OR POWER CORD IN WATER OR OTHER CLEANING SOLUTION; CLEAN USING A DAMP (NOT WET) CLOTH OR SPONGE. FAILURE TO FOLLOW THE CLEANING PROCEDURES DESCRIBED HEREIN COULD RESULT IN HAZARDS TO USERS.

As with any A.C. powered electrical device, care must be taken to prevent liquid from entering the pump housing or the A.C. receptacle in order to avoid electrical shock hazard, fire hazard, or damage to electrical components.

Disconnect pump from A.C. power source before cleaning. Upon completion of cleaning, do not connect to A.C. power source until pump and power cord are thoroughly dry.

Cleaning of Kangaroo 224 and 324 pumps must be performed as follows:

- A mild detergent should be used for general cleaning. If necessary, the pump may be cleaned with a 10:1 water and hypochlorite mixture, however, repeated cleaning with this solution can damage the plastic pump case. Isopropyl alcohol applied with a damp (*not wet*) cotton swab may be used for cleaning difficult to reach areas such as the drop sensor and inside the A.C. receptacle, however, it should be used sparingly because repeat cleaning may damage the case.

- DO NOT USE strong cleaners such as Spray-Nine, Phisohex, Hibiclens, or Vesta-Syde because damage to the pump case housing can result.

DIRECTIONS FOR CLEANING PUMP HOUSING

- Refer to General Cleaning Directions before starting.
- Clean outside surface with a damp (*not wet*) cloth or sponge and keep pump in upright position as much as possible.
- Avoid excess moisture near handle hinges.
- Avoid excess moisture near pole clamp area.
- When cleaning around buzzer opening on back of pump housing, do not let cleaning solution get inside pump.
- Avoid getting any moisture into the A.C. receptacle.

DIRECTIONS FOR CLEANING PUMP A.C. RECEPTACLE AND POWER CORD

- Refer to General Cleaning Directions before starting.
- Unless soiling is observed, the power cord and pump A.C. receptacle should not be cleaned.